III. REMARKS

1. Claims 40, 42, 44-49, 52, 54, 55, 58-65, 68, 70-73, 76-83, 86-91, 94-99, 102, 105, 108-116, and 118-131 remain in the application. Claims 1-39, 41, 43, 50, 51, 53, 56, 57, 66, 67, 69, 74, 75, 84, 85, 92, 93, 100, 101, 103, 104, 106, 107, and 117 have been cancelled without prejudice. Claim 42 has been amended.

The amendments to the claims are not limiting, are not made for reasons related to patentability, and do not raise issues of estoppel.

2. Applicants appreciate the indication that claims 55, 99, 118-120, and 127 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. However, Applicants believe that these claims are patentable as they stand for the reasons stated below.

3. Applicants submit that claims 40, 44-49, 58, 60-64, 70, 76, 78-82, 91, 94-96, 111-113, 121, 123-126, 130, and 131 are patentable over the combination of Andrew (US 6,563,958, "Andrew") and Nishi (US 6,275,533) under 35 USC 103(a).

Applicants respectfully maintain that the combination of Andrew and Nishi fails to disclose or suggest:

> performing a filtering operation across a block boundary between the first decoded image block and a previously decoded image block adjacent to the first decoded image block such that the pixel value of at least one decoded pixel in the first decoded image block is modified by the filtering operation; and
>
> performing a prediction for at least one pixel value of a second block, the second block adjacent to the first decoded image block, wherein the prediction is performed based on the modified pixel value of the first decoded image block by the filtering operation,

as recited by claim 40. Independent claims 58, 76, 94, 111, 121, 130, and 131 all recite similar features.

On page 3, line 4 of the present action, the Examiner argues that during the decoding process of Andrew, Nishi's disclosure suggests that intra prediction can be performed based on a previously decoded image block, and refers to column 24, line 50 through column 25, line 16. This portion of Nishi teaches that the block memory 115 stores DCT coefficients of a previously decoded block and the DCT coefficient predictor generates prediction values 111 of quantized DCT coefficients of the block to be decoded, from the quantized DCT coefficients 114 of the decoded block stored in the block memory 115. The Examiner notes that the previously decoded image block comprises the block that was modified by the filtering step 302 in the previous iteration of Andrew (Fig. 3).

It appears that the Examiner is proposing that because Nishi teaches block memory and Andrew teaches block boundary filtering, it would have been obvious to use a filter value of a previously decoded block in filtering the current block. Applicants disagree because the combination of Andrew and Nishi is not capable of using a filter value of a previously decoded block to filter the current block.

In column 24, lines 58-67, Nishi states that an image decoding apparatus comprises an intra frame prediction unit and:

> *an adder 112 which adds the intra-frame prediction values 111 and the DCT coefficient difference values 108 to restore quantized DCT coefficients of the block to be decoded.*
>
> *The intra frame prediction unit 10 comprises a block memory 115 which stored the output 106 from the adder 112 as quantized DCT coefficients of a block which has already been decoded;* (Emphasis added)

It should be clear that the DCT coefficients of the decoded blocks are needed to determine the DCT coefficients of the current block because the DCT difference values are received from the encoder, not the actual DCT values. If a filter has

somehow been introduced between the adder 112 and the block memory 115 of Nishi, the filter has produced filtered DCT values which do not correspond with the filtered block boundary values as such. If the system of Nishi could actually utilize filtered pixel values of the decoded block, the stored DCT coefficients should be inverse quantized and inverse transformed to perform the filtering and after that DCT transformed (and quantized) before storing the DCT coefficients to the block memory. If these DCT coefficients were added with DCT coefficient difference values received from the encoder, the results would not be correct.

To achieve the effect of the present claims, i.e. "a prediction for at least one pixel of a currently coded block is performed based on modified pixel values of an adjacent block, wherein the modified pixel values are obtained after decoding and performing a filtering operation.", the combination of Andrew and Nishi MUST be further extended to include "forward transformation" of the filtered values. In other words, the decoder should perform a DCT transform on a previously decoded and filtered neighboring block to obtain the DCT coefficients representative of the filtered pixels values of the corresponding neighboring block. And then such values must be used to reconstruct the DCT values of the current block. However in Nishi the DCT coefficient values used in intra prediction are described in column 24, lines 60-67 where:

> *an adder 112 which adds the intra-frame prediction values 111 and the DCT coefficient difference values 108 to restore quantized DCT coefficients of the block to be decoded.*
>
> *The intra frame prediction unit 10 comprises a block memory 115 which stored the output 106 from the adder 112 as quantized DCT coefficients of a block which has already been decoded;* (Emphasis added)

The DCT coefficients reconstructed as described above are used in prediction of the DCT coefficients for subsequent image blocks. There is no suggestion or teaching that the further transform operation is performed.

Therefore, combination of Nishi and Andrew neither operates the same way as in claim 40 nor provides the same result. Thus, Nishi and Andrew, considered individually or in combination, fail to teach or suggest any of the limitations of claims 40, 58, 76, 94, 111, 121, 130, and 131.

At least for these reasons, the combination of Andrew and Nishi fails to render independent claims 40, 58, 76, 94, 111, 121, 130, and 131, and dependent claims 44-49, 60-64, 70, 78-82, 91, 95, 96, 112, 113, and 123-126 unpatentable.

4. Applicants submit that claims 42, 59, 77, and 122 are patentable over the combination of Andrew, Nishi and Osa et al. (US 6,496,505, "Osa") under 35 USC 103(a).

Claims 42, 59, 77, and 122 depend from claims 40, 58, 76, or 121. Osa fails to supply the features missing from Andrew and Nishi as argued above, that is:

> performing a filtering operation across a block boundary between the first decoded image block and a previously decoded image block adjacent to the first decoded image block such that the pixel value of at least one decoded pixel in the first decoded image block is modified by the filtering operation; and
>
> performing a prediction for at least one pixel value of a second block, the second block adjacent to the first decoded image block, wherein the prediction is performed based on the modified pixel value of the first decoded image block by the filtering operation,

Therefore the combination of Andrew, Nishi, and Osa fails to render claims 42, 59, 77, and 122 unpatentable.

5. Applicants respectfully submit that claims 52, 54, 65, 68, 71-73, 83, 86-91, 97, 98, 102, 105, 108-110, 114-116, 128, and 129 are patentable over the combination of Andrew, Nishi, and Keith et al. (US 5,419,513, "Keith").

Independent claims 97, 98, 108, and 114 recite features similar to claims 40, 58, 76, 94, 111, 121, 130, and 131 argued above.

Claims 52, 54, 65, 68, 71-73, 83, 86-91, 102, 105, 109, 110, 115, 116, 128, and 129 depend from claims 40, 58, 76, 97, 98, 108, or 114.

Keith fails to supply the features of the independent claims missing from Andrew and Nishi as argued above, that is:

> performing a filtering operation across a block boundary between the first decoded image block and a previously decoded image block adjacent to the first decoded image block such that the pixel value of at least one decoded pixel in the first decoded image block is modified by the filtering operation; and
>
> performing a prediction for at least one pixel value of a second block, the second block adjacent to the first decoded image block, wherein the prediction is performed based on the modified pixel value of the first decoded image block by the filtering operation,

Therefore, the combination of Andrew, Nishi, and Keith fails to render claims 52, 54, 65, 68, 71-73, 83, 86-91, 97, 98, 102, 105, 108-110, 114-116, 128, and 129 unpatentable.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Please charge Deposit Account No. 16-1350 $1050.00 for a three (3) month extension of time.

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Respectfully submitted,

30 November 2007

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